SEQUENCE LISTING

<110> BACHMANN, Heinrich
       BRUGGER, Roland
       FRIEDLEIN, Arno M
       WIRTZ, Gabriele M
       WOGGON, Wolf-Dietrich
       WYSS, Adrian
       WYSS, Markus

<120> BETA,BETA-CAROTENE 15,15'-MONOOXYGENASES, NUCLEIC ACID
       SEQUENCES CODING THEREFOR AND THEIR USE

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<151> 1999-02-22

<160> 10

<170> PatentIn Ver. 2.1

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Leu Arg Asn Gly Pro Gly Met His Thr Ile Gly Asp Thr Lys Tyr Asn
            35   40   45

His Trp Phe Asp Gly Leu Ala Leu Leu His Ser Phe Thr Phe Lys Asn
       50   55   60

Gly Glu Val Tyr Tyr Arg Ser Lys Tyr Leu Arg Ser Asp Thr Tyr Asn
 65   70   75   80

Cys Asn Ile Glu Ala Asn Arg Ile Val Val Ser Glu Phe Gly Thr Met
                    85   90   95

Ala Tyr Pro Asp Pro Cys Lys Asn Ile Phe Ala Lys Ala Phe Ser Tyr
                   100   105   110

Leu Ser His Thr Ile Pro Glu Phe Thr Asp Asn Cys Leu Ile Asn Ile
        115   120   125

Met Lys Thr Gly Asp Asp Tyr Tyr Ala Thr Ser Glu Thr Asn Phe Ile
        130   135   140

Arg Lys Ile Asp Pro Gln Thr Leu Glu Thr Leu Asp Lys Val Asp Tyr
145   150   155   160

Ser Lys Tyr Val Ala Val Asn Leu Ala Thr Ser His Pro His Tyr Asp
                165   170   175

Ser Ala Gly Asn Ile Leu Asn Met Gly Thr Ser Ile Val Asp Lys Gly
                180   185   190

Arg Thr Lys Tyr Val Leu Phe Lys Ile Pro Ser Ser Val Pro Glu Lys
                195   200   205

Glu Lys Lys Lys Ser Cys Phe Lys His Leu Glu Val Val Cys Ser Ile
        210   215   220

Pro Ser Arg Ser Leu Leu Gln Pro Ser Tyr Tyr His Ser Phe Gly Ile
225   230   235   240

Thr Glu Asn Tyr Ile Val Phe Ile Glu Gln Pro Phe Lys Leu Asp Ile
                245   250   255

Val Lys Leu Ala Thr Ala Tyr Ile Arg Gly Val Asn Trp Ala Ser Cys
                260   265   270

Leu Ser Phe His Lys Glu Asp Lys Thr Trp Phe His Phe Val Asp Arg
                275   280   285

Lys Thr Lys Lys Glu Val Ser Thr Lys Phe Tyr Thr Asp Ala Leu Val
        290   295   300

Leu Tyr His His Ile Asn Ala Tyr Glu Glu Asp Gly His Val Val Phe
305   310   315   320

Asp Ile Val Ala Tyr Arg Asp Asn Ser Leu Tyr Asp Met Phe Tyr Leu
                325   330   335

Lys Lys Leu Asp Lys Asp Phe Glu Val Asn Asn Lys Leu Thr Ser Ile
                340   345   350

Pro Thr Cys Lys Arg Phe Val Val Pro Leu Gln Tyr Asp Lys Asp Ala
        355   360   365

Glu Val Gly Ser Asn Leu Val Lys Leu Pro Thr Ser Ala Thr Ala Val
370   375   380

2

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Lys Glu Lys Asp Gly Ser Ile Tyr Cys Gln Pro Glu Ile Leu Cys Glu
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Gly Ile Glu Leu Pro Arg Val Asn Tyr Asp Tyr Asn Gly Lys Lys Tyr
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Lys Tyr Val Tyr Ala Thr Glu Val Gln Trp Ser Pro Val Pro Thr Lys
                420             425             430

Ile Ala Lys Leu Asn Val Gln Thr Lys Glu Val Leu His Trp Gly Glu
            435             440             445

Asp His Cys Trp Pro Ser Glu Pro Ile Phe Val Pro Ser Pro Asp Ala
        450             455             460

Arg Glu Glu Asp Glu Gly Val Val Leu Thr Cys Val Val Val Ser Glu
465             470             475                     480

Pro Asn Lys Ala Pro Phe Leu Leu Ile Leu Asp Ala Lys Thr Phe Lys
                485             490             495

Glu Leu Gly Arg Ala Thr Val Asn Val Glu Met His Leu Asp Leu His
            500             505             510

Gly Met Phe Ile Pro Gln Asn Asp Leu Gly Ala Glu Thr Glu
            515             520             525


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3

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Ile Gly Asp Thr Lys Tyr Asn His Trp Phe Asp Gly Leu Ala Leu Leu
        35   40   45

His Ser Phe Thr Phe Lys Asn Gly Glu Val Tyr Tyr Arg Ser Lys Tyr
    50   55   60

Leu Arg Ser Asp Thr Tyr Asn Cys Asn Ile Glu Ala Asn Arg Ile Val
65   70   75   80

Val Ser Glu Phe Gly Thr Met Ala Tyr Pro Asp Pro Cys Lys Asn Ile
            85   90   95

Phe Ala Lys Ala Phe Ser Tyr Leu Ser His Thr Ile Pro Glu Phe Thr
            100   105   110

Asp Asn Cys Leu Ile Asn Ile Met Lys Thr Gly Asp Asp Tyr Tyr Ala
        115   120   125

Thr Ser Glu Thr Asn Phe Ile Arg Lys Ile Asp Pro Gln Thr Leu Glu
    130   135   140

Thr Leu Asp Lys Val Asp Tyr Ser Lys Tyr Val Ala Val Asn Leu Ala
145   150   155   160

Thr Ser His Pro His Tyr Asp Ser Ala Gly Asn Ile Leu Asn Met Gly
            165   170   175

Thr Ser Ile Val Asp Lys Gly Arg Thr Lys Tyr Val Leu Phe Lys Ile
            180   185   190

Pro Ser Ser Val Pro Glu Lys Glu Lys Lys Lys Ser Cys Phe Lys His
    195   200   205

Leu Glu Val Val Cys Ser Ile Pro Ser Arg Ser Leu Leu Gln Pro Ser
    210   215   220

Tyr Tyr His Ser Phe Gly Ile Thr Glu Asn Tyr Ile Val Phe Ile Glu
225   230   235   240

Gln Pro Phe Lys Leu Asp Ile Val Lys Leu Ala Thr Ala Tyr Ile Arg
            245   250   255

Gly Val Asn Trp Ala Ser Cys Leu Ser Phe His Lys Glu Asp Lys Thr
            260   265   270

Trp Phe His Phe Val Asp Arg Lys Thr Lys Lys Glu Val Ser Thr Lys

6

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Leu Tyr Asp Met Phe Tyr Leu Lys Lys Leu Asp Lys Asp Phe Glu Val
                325                 330                 335

Asn Asn Lys Leu Thr Ser Ile Pro Thr Cys Lys Arg Phe Val Val Pro
            340                 345                 350

Leu Gln Tyr Asp Lys Asp Ala Glu Val Gly Ser Asn Leu Val Lys Leu
            355                 360                 365

Pro Thr Ser Ala Thr Ala Val Lys Glu Lys Asp Gly Ser Ile Tyr Cys
    370                 375                 380

Gln Pro Glu Ile Leu Cys Glu Gly Ile Glu Leu Pro Arg Val Asn Tyr
385                 390                 395                 400

Asp Tyr Asn Gly Lys Lys Tyr Lys Tyr Val Tyr Ala Thr Glu Val Gln
                405                 410                 415

Trp Ser Pro Val Pro Thr Lys Ile Ala Lys Leu Asn Val Gln Thr Lys
                420                 425                 430

Glu Val Leu His Trp Gly Glu Asp His Cys Trp Pro Ser Glu Pro Ile
            435                 440                 445

Phe Val Pro Ser Pro Asp Ala Arg Glu Glu Asp Glu Gly Val Val Leu
    450                 455                 460

Thr Cys Val Val Val Ser Glu Pro Asn Lys Ala Pro Phe Leu Leu Ile
465                 470                 475                 480

Leu Asp Ala Lys Thr Phe Lys Glu Leu Gly Arg Ala Thr Val Asn Val
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Glu Met His Leu Asp Leu His Gly Met Phe
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            35                  40                  45

Leu Leu His Lys Phe Asp Phe Lys Glu Gly His Val Thr Tyr His Arg
    50                  55                  60

Arg Phe Ile Arg Thr Asp Ala Tyr Val Arg Ala Met Thr Glu Lys Arg
65                  70                  75                  80

Ile Val Ile Thr Glu Phe Gly Phe Thr Thr Cys Ala Phe Pro Asp Pro
                85                  90                  95

Cys Lys Asn Ile Phe Ser Arg Phe Phe Ser Tyr Phe Arg Gly Val Glu
                100                 105                 110

Val Thr Asp Asn Ala Leu Val Asn Val Tyr Pro Val Gly Glu Asp Tyr
            115                 120                 125

Tyr Ala Cys Thr Glu Thr Asn Phe Ile Thr Lys Ile Asn Pro Glu Thr
    130                 135                 140

Leu Glu Thr Ile Phe Thr Lys Gln Val Asp Leu Cys Asn Tyr Val Ser
145                 150                 155                 160

Val Asn Gly Ala Thr Ala His Pro His Ile Glu Asn Asp Gly Thr Val
            165                 170                 175

Tyr Asn Ile Gly Asn Cys Phe Gly Lys Asn Phe Ser Ile Ala Tyr Asn
            180                 185                 190

Ile Val Lys Ile Pro Pro Leu Gln Ala Asp Lys Glu Asp Pro Ile Ser
            195                 200                 205

Lys Phe Thr Ser Glu Ile Val Val Gln Phe Pro Cys Ser Asp Arg Phe
    210                 215                 220

Lys Pro Ser Tyr Val His Ser Phe Gly Leu Thr Pro Asn Tyr Ile Val
225                 230                 235                 240

Phe Val Glu Thr Pro Val Lys Ile Asn Leu Phe Lys Phe Leu Ser Ser
                245                 250                 255

Trp Ser Leu Trp Gly Ala Asn Tyr Met Asp Cys Phe Glu Ser Phe Thr
            260                 265                 270

Asn Glu Thr Met Gly Val Trp Leu His Ile Ala Asp Lys Lys Arg Lys
            275                 280                 285
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Lys Tyr Leu Asn Asn Lys Tyr Arg Thr Ser Pro Phe Asn Leu Phe His
290   295   300

His Ile Asn Thr Tyr Glu Asp Asn Gly Phe Leu Ile Val Asp Leu Cys
305   310   315   320

Cys Trp Lys Gly Phe Glu Phe Val Tyr Asn Tyr Phe Thr Leu Tyr Leu
                325   330   335

Ala Asn Leu Arg Glu Asn Trp Glu Glu Val Lys Lys Asn Ala Arg Lys
            340   345   350

Ala Pro Gln Pro Glu Val Arg Arg Tyr Val Leu Pro Leu Asn Ile Asp
            355   360   365

Lys Ala Asp Thr Gly Lys Asn Leu Val Thr Leu Pro Asn Thr Thr Ala
370   375   380

Thr Ala Ile Leu Cys Ser Asp Glu Phe Thr Thr Ile Trp Leu Glu Pro
385   390   395   400

Glu Val Leu Phe Ser Gly Pro Arg Gln Ala Phe Glu Phe Pro Gln Ile
                405   410   415

Asn Tyr Gln Lys Tyr Cys Gly Lys Pro Tyr Thr Tyr Ala Tyr Gly Leu
            420   425   430

Gly Leu Asn His Phe Val Pro Asp Arg Leu Cys Lys Leu Asn Val Lys
            435   440   445

Thr Lys Glu Thr Trp Phe Thr Val Trp Gln Glu Pro Asp Ser Tyr Pro
    450   455   460

Ser Glu Pro Ile Phe Val Ser His Pro Asp Ala Leu Glu Glu Asp Asp
465   470   475   480

Gly Val Val Leu Ser Val Val Val Ser Pro Gly Ala Gly Gln Lys Pro
                485   490   495

Ala Tyr Leu Leu Ile Leu Asn Ala Lys Asp Leu Ser Glu Val Ala Arg
            500   505   510

Ala Glu Phe Thr Val Glu Ile Asn Ile Pro Val Thr Phe His Gly Leu
            515   520   525

Phe

<210> 6
<211> 18

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<212> PRT
<213> CHICKEN

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Leu Pro


<210> 7
<211> 18
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<213> CHICKEN

<400> 7
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 1               5                   10                  15

Leu Pro


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